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ABSTRACT

The purposes of this study were (1) to provide an objective description of the supervisor-teacher conference behavior in a micro-teaching situation, (2) to determine the combinations of teacher and supervisor characteristics that predict conference behavior and conference effectiveness, and (3) to determine the supervisor characteristics that predict supervisors who change their behavior toward a more indirect and supportive conference. Test results, along with conference data and personal data, were used as supervisor and teacher variables for the statistical analysis. Through the use of the multiple regression technique, full and restricted models were tested to determine significant predictor sets. (Author)

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PREDICTORS OF SUPERVISER TEACHER CONFERENCE INTERACTION

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Since little knowledge is available which directly relates to the prediction and evaluation of supervisory conference behavior, this study was primarily descriptive and exploratory. Due to the increasingly widespread use of teaching laboratories and microteaching experience, this study focussed on the conference behavior of supervisors and teachers and the subsequent teaching behavior in a microteaching-supervision practicum.

If supervision in the microteaching laboratory is assumed to be teaching (Lindsey, 1969) then the supervisor's behavior may be subjected to systematic study just as other teaching can be studied. Since interaction analysis has provided a useful tool for the systematic study of teacher behavior and effectiveness then it should also provide a useful means for the systematic study of supervisor teacher conference behavior in a microteaching conference situation. Therefore, the first purpose of the study was to provide an objective description of supervisor teacher behavior in a microteaching conference situation using a system of interaction analysis.

Little knowledge is available which directly relates to the prediction and evaluation of supervisor behavior. If it can be assumed that supervisory conference behavior and effectiveness as measured by the proportion of suggested changes the teacher makes in the reteach is a product of many factors operating at the same time, then no single characteristic or factor can adequately predict conference behavior or conference effectiveness. Thus, the second purpose of this study was to determine the combination of supervisor and teacher factors which would predict conference behavior and effectiveness.

Researchers have found that microteaching has been effective for changing teachers' teaching behavior (Allen, 1966; Larson, 1966). Microsupervision experience similar to microteaching has been found to be

effective for changing supervisors' behavior (Douglass, 1970). Little is known, however, about factors affecting the degree of change found in supervisors' behavior during a microsupervision experience. The third purpose of this study was to investigate the supervisor characteristics which differentiate between supervisors who change their conference behavior in the desired direction from those who do not change in the desired direction.

Subjects

Supervisors

Twenty-seven graduate students enrolled in the Principles of Educational Supervision class served as supervisors for this study. This course is required for all administration and supervision majors. Each supervisor supervised four different teachers.

Teachers

The teachers were 16 students enrolled in Principles and Practices of Secondary Education. This course is required of all candidates for teacher certification. Several teaching fields were represented.

Microteaching students

Twelve students, grades eleven and twelve, from Central High School, Akron Public Schools were employed to be students each morning for microteaching. These students were paid three dollars per morning for participating. They were each expected to complete a brief written evaluation of each teacher immediately after the teach or reteach.

Instruments and Scoring Procedures

Teacher and Supervisor Characteristics

During the first week of class the 27 supervisors and 16 teachers

were given Form A of the Sixteen Personality Factor Questionnaire for young adults and adults (Cattell & Eber, 1967). The four second-order factors were derived using the procedure described in the manual. These factors are as follows: Factor I Low vs. High Anxiety, Factor II Introversion vs. Extraversion, Factor III Tenderminded Emotionality vs. Alert Poise, and Factor IV Subduedness vs. Independence.

Supervisors were given Form A of the Minnesota Teacher Attitude Inventory during the first week of class to assess their satisfaction with teaching. The author's scoring key was used to obtain the MTAI total score.

The Minnesota Teacher Attitude Inventory was also scored using the procedure described by Yee and Fruchter (1971) to obtain scores for five factors. These factors were derived by Yee and Fruchter using factor analysis on MTAI responses of experienced teachers.

Personal characteristics of both teachers and supervisors were obtained from information on the answer sheet of the Sixteen Personality Factor Questionnaire and from personal data forms given during the last week of the class.

Conference Interaction Variables

Blumberg system for analyzing supervisor-teacher interaction. The Blumberg system of interaction analysis contains elements of the classification systems of both Flanders and Bales. A total of 15 categories is included in the system. Ten of the categories deal with supervisor behavior and four with teacher behavior. One category is used to represent silence or confusion. Most of the categories are concerned with supervisor behavior because he is considered to be the member of the dyad having the most influence and control. Blumberg assumes that the supervisor's behavior is the primary determinant of the communication

pattern and emotional tone of the conference.

The fifteen categories are constructed to be mutually exclusive, yet to include all verbal interaction in the conference. The categories are listed below.

Categories for Analyzing Supervisor-Teacher Interaction

Supervisor Behavior

Category 1. Uses support-inducing communications behavior.

Category 2. Praises.

Category 3. Accepts or uses teacher's ideas.

Category 4. Asks for information.

Category 5. Gives information.

Category 6. Asks for opinions.

Category 7. Asks for suggestions.

Category 8. Gives opinions.

Category 9. Gives suggestions.

Category 10. Criticizes.

Teacher Behavior

Category 11. Asks for information, opinions. or suggestions.

Category 12. Gives information, opinions, or suggestions.

Category 13. Exhibits positive social emotional behavior.

Category 14. Exhibits negative social emotional behavior.

Category 15. Silence or confusion.

The above system was used as the research instrument to obtain data about the conference interaction.

Conference effectiveness. The measure of conference effectiveness used in this study was the proportion of changes suggested in the

conference which were implemented in the reteach. Suggestions which were impossible to make under the limitations of the microteaching situation were not included as a suggestion for change for purposes of analysis.

Method of observing and recording video tapes for conference variables. All teach, first conference, and reteach sequences were recorded on video tape and saved until the completion of the course. After the course was completed, two graduate students were trained in the use of the Blumberg system until both inter-rater and intra-rater reliability exceeded .85 using Scott's reliability coefficient (Flanders, 1967). An entire conference was the unit of time used to estimate reliability. Raters also recorded suggestions verbalized during the conference and in the conference summary.

When using the Blumberg system, behavior is systematically classified in one of fifteen categories every three seconds or each time the behavior changes. In determining which category is best represented by the observed behavior, each act is viewed as a response to the last act of the other person or in anticipation of the next act. This places the focus of the behavior on effect rather than on intent.

The mechanics of coding behavior and developing a matrix are similar to those used by the Flanders system. A matrix was constructed for each of the 101 usable conferences. From the matrix the indirect-direct ratio, the support-criticism ratio, the teacher-supervisor talk ratio, the proportion of time spent in each category and in each of the steady state and reaction areas were determined.

Analysis of Data

Descriptive

The first purpose of the study was to provide an objective description of supervisor behavior in a microteaching laboratory. An

individual interaction analysis matrix was made for each of the 102 conferences included in this study. A composite matrix was compiled for all 102 conferences.

Means and standard deviations were computed for 15 supervisor and 7 teacher variables. Using data from the individual conference matrices, means and standard deviations were computed for 31 conference interaction variables. Pearson product moment correlations were computed between the 15 supervisor variables and the 31 conference interaction variables and between the 7 teacher variables and the 31 conference interaction variables.

Exploratory

The second purpose was to determine the combination of supervisor and teacher characteristics which would predict conference behavior and effectiveness as indicated by the proportion of suggested changes made during the reteach. Multiple regression (Bottenberg & Ward, 1963; Kelly et al., 1969) was used for these analyses.

The basic question asked in multiple regression analysis is, "Are A, B, C, etc., items of information significant in the prediction of criterion Y?" In terms of the second purpose of this study predictors were divided into sub-sets and tested separately. This procedure allows for sufficient subjects per variable to avoid the systematic bias found in multiple correlations when the number of subjects per variables is low (Newman & Fry, 1972).

Five predictor sets were defined for each of three criterion measures. Predictor sets were supervisor characteristics, teacher characteristics, 16PF scores of both the supervisor and teacher, MTAI scores of the supervisor, and supervisor and teacher personal data. An indirect/direct ratio, a support/criticism ratio and a supervisor/teacher talk ratio were the criterion measures for each predictor set. The full

models constructed were as follows:

MODEL 1 $Y = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_5X_5 + a_6X_6 + a_7X_7 + a_8X_8 + a_9X_9 + a_{10}X_{10} + a_{11}X_{11} + a_{12}X_{12} + a_{13}X_{13} + a_{14}X_{14} + a_{15}X_{15} + a_{16}X_{16} + E$

MODEL 2 $Y = a_0U + a_{17}X_{17} + a_{18}X_{18} + a_{19}X_{19} + a_{20}X_{20} + a_{21}X_{21} + a_{22}X_{22} + a_{23}X_{23} + a_{24}X_{24} + E$

MODEL 3 $Y = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_{17}X_{17} + a_{18}X_{18} + a_{19}X_{19} + a_{20}X_{20} + E$

MODEL 4 $Y = a_0U + a_5X_5 + a_6X_6 + a_7X_7 + a_8X_8 + a_9X_9 + a_{10}X_{10} + E$

MODEL 5 $Y = a_0U + a_{11}X_{11} + a_{12}X_{12} + a_{13}X_{13} + a_{14}X_{14} + a_{15}X_{15} + a_{16}X_{16} + a_{21}X_{21} + a_{22}X_{22} + a_{23}X_{23} + a_{24}X_{24} + E$

where Y = one of three criterion measures: indirect/direct ratio, support/criticism ratio, and supervisor/teacher talk ratio for 101 conferences;

X_1 = supervisor score on 16PF Factor I;

X_2 = supervisor score on 16PF Factor II;

X_3 = supervisor score on 16PF Factor III;

X_4 = supervisor score on 16PF Factor IV;

X_5 = supervisor score on MTAI Total;

X_6 = supervisor score on MTAI Factor I;

X_7 = supervisor score on MTAI Factor II;

X_8 = supervisor score on MTAI Factor III;

X_9 = supervisor score on MTAI Factor IV;

X_{10} = supervisor score on MTAI Factor V;

X_{11} = supervisor age;

X_{12} = 1 if supervisor is male, 0 otherwise;

X_{13} = 1 if supervisor is female, 0 otherwise;

X_{14} = years of teaching experience for supervisor;

X_{15} = years of supervising experience for supervisor;

X_{16} = micro-supervision experience of supervisor;

X_{17} = teacher score on 16PF Factor I;

X_{18} = teacher score on 16PF Factor II;

X_{19} = teacher score on 16PF Factor III;

X_{20} = teacher score on 16PF Factor IV;

X_{21} = teacher age;

X_{22} = 1 if teacher is male, 0 if otherwise;

X_{23} = 1 if teacher is female, 0 if otherwise;

X_{24} = years of teaching experience for teacher;

U = unit vector;

a_0 = regression weight that yields the constant when multipled by U;

E = error vector;

$a_1, \ldots, a_{24}$ = set of regression weights that minimize the sum of the squared E elements.

The above 15 full models were tested against the restricted model $Y = a_0U + E$ to determine if knowledge of scores on variables in the predictor set was significantly more efficient than no knowledge of the scores on the predictor variables for predicting the criterion. Other restricted models were constructed to determine which variables in each predictor set accounted for a significant amount of variance over and above that of the remaining variables in the predictor set.

Six predictor sets were defined for the criterion of conference effectiveness. Predictor sets were supervisor characteristics, teacher characteristics, 16PF scores for supervisors and teachers, MTAI scores for the supervisors, teacher and supervisor personal data, and conference interaction variables. The criterion was defined as the proportion of changes suggested in the conference that were made in the reteach. A constant of one was added to the number of changes suggested when

computing the proportion of changes made in order to avoid a zero in the denominator. Six full models were constructed as follows:

MODEL 1 $Y = a_0U + a_1X_1 \ldots + a_{16}X_{16} + a_{25}X_{25} + E$

MODEL 2 $Y = a_0U + a_{17}X_{17} \ldots + a_{25}X_{25} + E$

MODEL 3 $Y = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_{17}X_{17} + a_{18}X_{18} + a_{19}X_{19} + a_{20}X_{20} + a_{25}X_{25} + E$

MODEL 4 $Y = a_0U + a_5X_5 \ldots + a_{10}X_{10} + a_{25}X_{25} + E$

MODEL 5 $Y = a_0U + a_{11}X_{11} \ldots + a_{16}X_{16} + a_{21}X_{21} \ldots + a_{24}X_{24} + a_{25}X_{25} + E$

MODEL 6 $Y = a_0U + a_{25}X_{25} + a_{26}X_{26} + a_{27}X_{27} + a_{28}X_{28} + a_{29}X_{29} + a_{30}X_{30} + E$

where $X_1, \ldots X_{24}$ = the same variables as above;

X_{25} = number of changes suggested in the conference;

X_{26} = indirect/direct ratio;

X_{27} = support/criticism ratio;

X_{28} = supervisor/teacher talk ratio;

X_{29} = 1 if conference included a summary, 0 if otherwise;

X_{30} = 1 if conference did not include a summary, 0 if otherwise;

U = unit vector;

a_0 = regression weight that yields the constant when multipled by U;

$a_1, \ldots a_{30}$ = regression weights.

The above six full models were tested against the restricted model $Y = a_0U + a_{25}X_{25} + E$ to determine if knowledge of variables in the predictor set was significantly more efficient than knowledge of the number of changes suggested only for predicting the proportion of suggested changes made in the reteach. Other restricted models were constructed to determine which variables in the predictor set accounted for a significant amount of variance over and above that of the other

variables in the predictor set.

The third purpose was to investigate those characteristics which differentiate between supervisors who change their conference behavior during the microsupervision experience from those who do not change. Three sets of predictors were defined for the three criterion measures. The predictor sets were supervisor 16PF scores, supervisor MTAI scores, and supervisor personal data. The criterion measures were fourth conference minus initial conference scores on the indirect/direct ratio, the support/criticism ratio, and the supervisor/teacher talk ratio. The full models constructed were as follows:

MODEL 1 $Y = a_0U + a_1X_1 + a_2X_2 + a_3X_3 + a_4X_4 + a_{31}X_{31} + E$

MODEL 2 $Y = a_0U + a_5X_5 + a_6X_6 + a_7X_7 + a_8X_8 + a_{31}X_{31} + E$

MODEL 3 $Y = a_0U + a_{11}X_{11} + a_{12}X_{12} + a_{13}X_{13} + a_{14}X_{14} + a_{31}X_{31} + E$

where $X_1, \ldots X_{14}$ = the same variables as for the above;

X_{31} = score on criterion measure from initial conference;

U = unit vector;

a_0 = regression weight that yields the constant when multipled by U;

$a_1, \ldots a_{31}$ = regression weights;

E = error vector.

The above three models were tested against the restricted model $Y = a_0U + a_{31}X_{31} + E$ to determine if knowledge of variables in the predictor set were more efficient than initial scores of indirect/direct ratio, support/criticism ratio, and supervisor/teacher talk ratio for predicting the change in conference behavior between the first and the last conference. Other restricted models were constructed to determine which variables in the predictor set accounted for a significant amount of variance over and above that of the remaining variables in the predictor set.

Results

Supervisor, Teacher and Conference Variables

A combined interaction analysis matrix is presented in Table 1. This matrix represents totals in each cell for 102 conferences between supervisors and teachers. Also presented are total tallies in each of the 15 behavior categories and the percentage of tallies found in each of the categories.

Inspection of Table 1 indicates that more conference time was spent on Category 12 (teacher giving information, opinion, or suggestion) than on any other category. Category 8 (supervisor giving opinion) and Category 5 (supervisor giving information) were the two categories most often used by the supervisor. The supervisor verbalized for 55.53 percent of the conference and the teacher verbalized 38.77 percent of the time. The remaining 5.7 percent was represented by Category 15 (silence and confusion).

Data for the second and third purposes of the study are represented by three kinds of variables: supervisor variables, teacher variables, and conference interaction variables. Tables 2, 3, 4 provide descriptive information about these variables. Table 2 provides means and standard deviations of the supervisor variables. The 16PF Factor scores are reported as sten scores. Inspection of Table 2 reveals that means fall within the four central sten scores but that considerable variability exists for the Anxiety and Extraversion Factors. The MTAI total and Factor scores are reported as raw scores. The standard deviations indicate considerable variability in supervisors' attitudes toward teaching and pupils. Over two-thirds of the supervisors have positive scores on the MTAI total score.

Table 3 provides means and standard deviations of teacher character-

istics. Inspection of Table 3 reveals that the means of the 16PF scores fall within the four central sten scores. Considerable variability exists for all four factors, with the largest amount for the Extraversion scores. A comparison of Table 2 and Table 3 indicates the greatest difference between teacher and supervisor 16PF scores is found on Factor IV Independence with the teachers having a higher mean sten score.

Means and standard deviations of conference interaction variables are reported in Tables 4 and 5. The means were derived from 101 individual conference matrices. Category 12 (teacher giving information, opinion, and suggestions) represents the largest number of tallies, 33.09 percent, and the largest standard deviation indicating a great difference in this category from conference to conference. Category 8 (supervisor giving opinion) represents the second largest number of tallies, 17.68 percent, and the second largest standard deviation, 9.75. The fewest number of tallies was found in Category 10 (criticism) and in Category 14 (exhibits negative social and emotional behavior). Both categories together accounted for less than 1 percent of the conference. The supervisor verbalized without the teacher reacting for 38.5 percent of the conference and the teacher verbalized with the supervisor reacting for 22.75 percent of the conference. The large standard deviations in these areas indicate wide variation from conference to conference. Either the supervisor or the teacher reacting to the other represented 28.8 percent of the conference time.

The mean number of suggestions made during the conference was 2.53 and the mean number of these suggestions implemented during the reteach was 1.82. Although the use of a conference summary was encouraged by the instructor, 48.5 percent of the conferences contained no summary. A summary was made by the teacher 23.8 percent of the time, by the supervisor

14.9 percent of the time, and it was made jointly 14.9 percent of the time.

Pearson product moment correlations were computed between supervisor variables and conference interaction variables and between teacher variables and conference interaction variables. Conference interaction variables with significant correlations are reported in Tables 5, 6, and 7. Of the correlations between 16PF Factor scores of the supervisor and the 35 conference interaction variables, 14 were significant at the .05 level. Nine of these were found between Factor II Extraversion and conference interaction variables. Positive relationships were found between supervisor extraversion scores and the following conference interaction variables: the supervisor giving suggestion; the teacher asking for information, opinion, or suggestions; the supervisor/teacher talk ratio; the amount of the conference used for methodology or control; and extended supervisor talk. There were negative correlations between supervisor extraversion scores and the following conference interaction variables: supervisor accepting and/or using teacher ideas; the teacher giving information, opinion, or suggestions; the amount of the conference used for utilization of teacher ideas; and the extended teacher talk. Correlations between Factor I Anxiety, Factor III Alert Poise, Factor IV Independence and the conference interaction variables occurred at a frequency less than chance.

Of the correlations between supervisor personal data and conference interaction variables, 23 were significant at the .05 level. The age of the supervisor correlated in the positive direction with the supervisor asking for opinions and the supervisor giving suggestions categories. There was a negative correlation between the age of the supervisor and the supervisor's acceptance or use of teachers' ideas. Correlations

between the sex of the supervisor and conference interaction variables indicate that males have fewer verbal interactions per conference and that females are more likely to make use of the conference summary. There were positive correlations between years of supervisor teaching experience and the supervisor giving suggestions and the amount of conference time spent discussing teaching methods or control. There were negative correlations between supervisor teaching experience and the supervisor accepting and using teacher ideas and the proportion of conference time spent on the utilization of teacher ideas. There were negative correlations between supervisor experience at supervision and the supervisor accepting teachers' ideas, the proportion of conference time used for utilization of teacher ideas and the proportion of conference time spent at the information data level. There were nine significant correlations between experience at microsupervision and conference interaction variables. Positive correlations were found between microsupervision experience and the following conference interaction variables: teacher giving information, opinions, or suggestions; extended teacher talk; and the summary of the conference by the teacher. Negative correlations were found between microsupervision experience and the following conference interaction variables: supervisor giving information; supervisor criticizing; the supervisor/teacher talk ratio; the proportion of conference time used for the utilization of teacher ideas; extended supervisor talk; and the number of changes suggested in the conference.

Of the correlations between supervisor MTAI scores and conference interaction variables, 12 significant correlations were found. Five of these correlations were between MTAI scores and the teacher asking for information, opinion, or suggestions. Supervisors who have less desirable attitudes toward pupils are more often asked by the teacher for information

opinion, or suggestions.

The correlations between teacher variables and conference interaction variables are reported in Table 7. Of the 140 correlations between teacher 16PF scores and conference interaction variables, 17 are significant at the .05 level. There were positive correlations between teacher anxiety scores and the following conference interaction variables: supervisor praise; teacher positive social emotional behavior; the number of suggestions made during the conference; the number of changes made during the reteach; and the teacher made conference summary. There was a negative correlation between the teacher's anxiety score and the amount of silence or confusion in the conference. There were positive correlations between teacher extraversion scores and the following conference interaction variables: teacher giving information, opinion, or suggestions; extended teacher talk. There were negative correlations between teacher extraversion scores and supervisor accepting teacher ideas, supervisor giving suggestions, the supervisor/teacher talk ratio, the proportion of conference time spent utilizing teacher ideas, and the extended supervisor talk. There was a positive correlation between teacher alert poise scores and the teacher made conference summary. There were positive correlations between teacher independence scores and praise by the supervisor and the conference summary made by the teacher.

Of the 105 correlations between teacher personal variables and conference interaction variables, 15 were significant at the .05 level. There were positive correlations between teacher age and the proportion of conference time both the supervisor and the teacher used reacting to the other. There were negative correlations between teacher age and the following conference interaction variables: supervisor/teacher talk ratio; the amount of conference time used discussing teaching methods or

control; extended supervisor talk; the number of changes suggested; and the number of changes made. Only one significant correlation was found between sex and conference interaction variables. Females were more likely to accept and use teacher ideas. There were positive correlations between teacher teaching experience and the following conference interaction variables: supervisor asking for information; the proportion of conference time the supervisor spent reacting to the teacher; and the proportion of conference time the teacher spent reacting to the supervisor. There were negative correlations between teacher teaching experience and the following conference interaction variables: supervisor giving suggestions; the proportion of conference time spent on information data level; the number of suggestions made; and the use of the conference summary.

Prediction of Conference Interaction Variables from Supervisor and Teacher Variables

Predictor sets for conference interaction variables were supervisor characteristics, teacher characteristics, 16PF scores for supervisor and teacher, MTAI scores for the supervisor, and supervisor and teacher personal data. Criterion measures were indirect/direct influence ratio, support/criticism ratio, and supervisor/teacher talk ratio. Results of the F-ratio testing the efficiency of various predictor sets are reported in Table 8.

Inspection of Table 8 reveals that none of the predictor sets for indirect/direct ratio yielded a significant F-ratio when tested against the fully restricted model. The 16PF scores for the supervisor and the teacher and the MTAI scores for the supervisor did not produce a significant F-ratio when tested against the fully restricted model for any of

the criterion measures.

Significant F-ratios were found for the following predictor sets when the support/criticism ratio was used as the criterion: supervisor variables; teacher variables; and supervisor and teacher personal data. When the full model of supervisor and teacher personal data was compared to a restricted model without knowledge of age, a significant F-ratio was found. A significant F-ratio was also found when the full model of personal data was compared to a restricted model without knowledge of sex.

Significant F-ratios were found for the teacher variable and the personal data predictor sets when supervisor/teacher talk was used as a criterion measure. When the full model of supervisor and teacher personal data was compared to the restricted model without knowledge of age a significant F-ratio was found.

Prediction of Conference Effectiveness from Supervisor Variables, Teacher Variables and Conference Interaction Variables

Predictor sets for predicting conference effectiveness were supervisor characteristics, teacher characteristics, 16PF scores for the supervisor and teacher, supervisor MTAI scores, supervisor and teacher personal data, and conference interaction variables. Results of the F-ratios testing the efficiency of various predictor sets are reported in Table 9. The F-ratios for two predictor sets were significant when the full model was compared to a restricted model containing knowledge of changes suggested only. The predictor sets which produced significant F-ratios were supervisor variables and 16PF scores for the supervisor and the teacher. An F-ratio testing the full model containing 16PF scores for the supervisor and teacher against a restricted model without knowledge of teacher scores was not significant. A full model containing

supervisor 16PF scores for the supervisor accounted for significantly more variance on the criterion, conference effectiveness, than the restricted model containing knowledge of the number of changes suggested only. No other predictor set yielded significant F-ratios when tested against the restricted model.

Prediction of a Change in Conference Behavior Between the First and Fourth Conference

Predictor sets for predicting a change in conference behavior were supervisor 16PF scores, MTAI scores, and supervisor personal data. None of the predictor sets predicted a change in conference behavior significantly better than knowledge of conference behavior on the initial conference.

Conclusions

The limited number of studies describing supervisor/teacher conference interaction have used a variety of techniques for quantification, therefore it is difficult to compare the results of this study to previous works. Two previous studies (Blumberg & Cusick, 1970; Douglass, 1970) used the same system of analysis as a research tool. Results of the Blumberg and Cusick study are similar for most categories. Supervisors in this study talked a larger percentage of the time and were more direct than those in the Blumberg and Cusick study. More criticism by the supervisor and more teacher defensive behavior was found by Blumberg and Cusick than was found in this study. These differences may result from differences in the focus of supervision. Blumberg and Cusick supervisors were experienced and tapes were from conferences held in the field.

Results of this study generally support the findings of the Douglass study using a similar situation and the same research tool. This study,

however, did not find the change in the indirect/direct ratio that Douglass found. This result may relate to differences in the sample itself or to differences in the statistical treatment of the data.

The following conclusions pertain to the prediction of supervisor/teacher conference interaction from various supervisor and teacher variables. The indirect/direct ratio, as a measure of conference interaction could not be predicted using any of the predictor sets. Supervisor variables accounted for the largest amount of variance, 11 percent. This, however, was not significantly more than accounted for by the fully restricted model.

The support/criticism ratio was more likely to be predicted than the indirect/direct ratio. Supervisor variables alone accounted for nearly 30 percent of the variance and teacher variables alone accounted for 14 percent of the variance. A combination of teacher and supervisor personal data accounted for 15 percent of the variance. Knowledge of age and sex were both significant predictors within the personal data predictor set. The findings indicate that both the supervisor and the teacher characteristics influence the support/criticism ratio, but that supervisor variables have more influence than teacher variables.

The supervisor/teacher talk ratio was predicted by teacher variables and by the supervisor and teacher personal data predictor sets. Supervisor variables accounted for 20 percent of the variance and teacher variables accounted for 23 percent. Because of the larger number of supervisor variables and their effect on the degrees of freedom, this amount was not significant. Teacher variables were a significant predictor set. Supervisor and teacher personal data accounted for 19 percent of the variance, which was significant. Age but not sex was a significant predictor within the personal data predictor set. These findings indicate

that both teacher characteristics and the teacher and supervisor personal data predict the supervisor/teacher talk ratio.

Apparently, supervisors determine the amount of support and criticism in a conference but the teacher has more influence on the supervisor/teacher talk ratio than does the supervisor. The ages of the supervisor and teacher also affect both the support/criticism ratio and the supervisor/teacher talk ratio. Higher correlations were found between teacher age and the support/criticism and supervisor/teacher talk ratio than between the supervisor's age and the criterion measures. The older the teacher, the more of the conference time spent in extended teacher talk and the more time the teacher spent reacting to the supervisor.

The position that supervision is teaching teachers and therefore that it is a superior-subordinate relationship is supported by the data. Supervisor characteristics can be used to predict the support/criticism ratio, yet the teacher characteristics, particularly age of teacher, seem to affect the supervisor/teacher talk ratio in the conference. This factor suggests that supervisors relate to younger teachers in one way and to older teachers in another.

The following conclusions pertain to the prediction of conference effectiveness from supervisor characteristics, teacher characteristics, personality and attitude test scores, personal data, and conference interaction variables. Significant predictor sets were supervisor variables, and 16PF scores. The number of changes suggested was statistically controlled by using a restricted model containing this variable when testing the efficiency of the various predictor sets for predicting the proportion of suggested changes implemented. Supervisor variables accounted for 20.5 percent of the variance over and above that accounted for by the number of changes suggested. Sixteen PF scores accounted for

13 percent of the variance and supervisor 16PF scores alone for 9.5 percent. MTAI scores, personal data, and the conference interaction variables were not significant predictor sets. Supervisor variables, particularly 16PF scores, appear to predict conference effectiveness. Supervisor variables, however, did not predict conference interaction variables and conference interaction variables did not predict conference effectiveness. Conference effectiveness cannot be predicted from teacher characteristics.

The following conclusions pertain to the characteristics of the supervisor which predict change in conference interaction between the first and the fourth conference. None of the models of characteristics predicting supervisors who change their conference behavior was significant. Since none of the previous predictor sets had predicted indirect/direct ratio, it is not surprising that a change in the indirect/direct ratio was not predicted. The largest difference between the full and the restricted model in the amount of variance accounted for was found for the support/criticism ratio. This difference, however, was not significant at the .05 level.

A change in conference style between the first and the last conference cannot be predicted using either 16PF scores, MTAI scores or supervisor personal data. This could be because supervisors do not change conference styles as a result of the microsupervision experience. Inspection of the correlations between supervisor and teacher talk and microsupervisory experience, however, does indicate a change in conference style. Failure to predict a change in conference style could also be due to the small number of supervisors studied (27) and to the effect of the teacher on the conference style.

This study has gone beyond previous studies using interaction analysis

to describe supervisor and teacher conference behavior. The use of multiple regression analysis as a statistical tool made it possible to investigate the relationship between characteristics of the supervisor and the teacher to conference interaction. Although the relatively small number of conferences in this study limited the use of this statistical tool, the results are encouraging. Knowledge of selected supervisor and teacher characteristics can be used to predict conference behavior in a microteaching situation.

The investigation of the effectiveness of a conference between a supervisor and a teacher has been quite limited. The use of the subsequent teaching behavior as a criterion measure provides one method of studying conference effectiveness. Since conference behavior was not a significant predictor of conference effectiveness for this study, there is insufficient evidence to reach conclusions about the relationship between conference behavior and the teacher's behavior following the conference.

TABLE 1

Interaction Analysis Matrix for 102 Supervisor-Teacher Conferences Combined

Category Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Total	%
1	126	34	10	5	26	30	5	36	0	0	7	302	33	2	77	693	6.19
2	23	57	6	7	60	10	2	147	4	1	0	11	22	0	16	368	3.28
3	11	19	55	12	57	34	11	56	13	1	3	112	20	0	25	429	3.83
4	0	0	0	57	5	7	0	3	0	0	4	108	10	0	10	204	1.82
5	7	39	1	36	450	80	41	154	30	1	11	66	93	1	39	1,049	9.36
6	0	2	1	2	25	255	1	19	16	0	11	283	38	1	64	731	6.53
7	0	1	0	0	8	9	122	6	2	0	6	92	3	0	24	273	2.44
8	12	146	4	24	138	81	27	1,116	54	10	10	89	196	3	71	1,981	17.68
9	3	2	0	0	18	15	2	43	281	1	8	25	55	2	14	469	4.11
10	0	0	0	0	4	1	0	4	2	8	0	1	3	0	1	24	.21
11	8	0	10	2	23	9	0	16	4	1	19	8	1	0	9	110	.98
12	393	28	317	33	90	103	19	133	14	1	21	2,413	9	4	129	3,707	33.09
13	34	23	19	12	77	32	9	168	37	0	2	33	14	0	40	505	4.51
14	2	0	0	1	0	0	0	4	2	0	0	4	0	6	2	21	.19
15	69	15	6	13	68	65	21	76	10	0	8	160	8	2	118	639	5.70
Total	693	368	429	204	1,049	731	273	1,981	1,469	24	110	3,707	505	21	639	11,203	

TABLE 2

Means and Standard Deviations of Selected Characteristics for 27 Supervisors

Characteristic	Mean	S.D.
16PF I Anxiety (sten)	4.44	2.11
16PF II Extraversion (sten)	6.36	2.16
16PF III Alert poise (sten)	4.92	1.35
16PF IV Independence (sten)	4.65	1.67
MTAI Total score	35.43	33.33
MTAI I Children's irresponsible tendencies	-6.59	11.13
MTAI II Conflict between teachers' and pupils' interests	-9.31	5.72
MTAI III Rigidity in handling pupils	-5.46	6.84
MTAI IV Pupils' independence in learning	2.31	3.17
MTAI V Pupils' acquiescence to teacher	2.41	2.07
Age (years)	32.61	8.57
Teaching experience (years)	6.84	5.43
Supervisory experience (years)	2.35	2.87

TABLE 3

Means and Standard Deviations of Selected Characteristics for 16 Teachers

Characteristic	Mean	S.D.
16PF I Anxiety (sten)	4.79	2.41
16PF II Extraversion (sten)	5.95	2.51
16PF III Alert poise (sten)	4.71	2.07
16PF IV Independence (sten)	6.43	2.13
Age (years)	25.16	5.97
Teaching experience (years)	1.01	1.51

TABLE 4

Means and Standard Deviations of

Interaction Variables from 101 Conferences

Variable	Mean	S.D.
Supervisor Behavior		
Category 1. Supports	6.19%	4.12
Category 2. Praises	3.28%	2.53
Category 3. Accepts or uses teacher's ideas	3.83%	2.78
Category 4. Asks for information	1.82%	2.42
Category 5. Gives information	9.36%	4.87
Category 6. Asks for opinions	6.53%	5.02
Category 7. Asks for suggestions	2.44%	3.05
Category 8. Gives opinions	17.68%	9.75
Category 9. Gives suggestions	4.19%	4.50
Category 10. Criticizes	.21%	.85
Teacher Behavior		
Category 11. Asks for information, opinions, or suggestions	.98%	1.41
Category 12. Gives information, opinions, or suggestions	33.09%	11.87
Category 13. Exhibits positive social emotional behavior	4.51%	3.59
Category 14. Exhibits negative social emotional behavior	.19%	.50
Category 15. Silence or confusion.	5.70%	4.37
Ratios		
Indirect/direct ratio	.67	.91

TABLE 4 continued

Variable	Mean	S.D.
Ratios		
Support/criticism ratio	9.58	6.08
Supervisor/teacher talk ratio	1.68	.96
Other Variables		
Building and maintaining interpersonal relationships	2.15%	2.89
Utilization of teacher ideas	.44%	.80
Working on information data level	4.60%	2.97
Working on opinion data level	3.79%	3.76
Methodology and/or control	13.29%	8.21
Controlling the teacher's behavior	.08%	.42
Extended teacher talk	22.75%	10.94
Extended supervisor talk	38.51%	12.71
Reaction Areas		
Teacher reacting to supervisor	14.46%	4.76
Supervisor reacting to teacher	14.38%	4.88
Total number of behavior sequences in conference	109.23	52.50
Number of suggestions made in conference	2.52	1.51
Number implemented in reteach	1.82	1.33

TABLE 5

Correlations Between Supervisor Characteristics and Conference Variables
(Non-significant correlations have been omitted)

Conference Variables	Supervisor Characteristics								
Blumberg System	16 PF1	16 PF2	16 PF3	16 PF4	Age	Sex	Teacher Experience	Supervisory Experience	Micro Experience
Supervisor Behavior									
Category 3 Accepts		* -.212			** -.297		* -.227	** -.310	
Category 5 Gives information									* -.243
Category 6 Asks for opinion			* .199		* .241				
Category 9 Gives suggestions		* .201			* .196		* .204		
Category 10 Criticizes									* -.196
Teacher Behavior									
Category 11 Asking		* .208							
Category 12 Giving		* -.227							** .279
Category 14 Exhibits Negative				* .213					
Category 15 Silence				* .198					
Ratios									
Supervisor/ Teacher Talk		* .221							** -.261

TABLE 5 continued

Conference Variables	Supervisor Characteristics								
Blumberg System	16 PF1	16 PF2	16 PF3	16 PF4	Age	Sex	Teacher Experience	Supervisory Experience	Micro Experience
Steady State Areas									
Utilization of Teacher Ideas	* .226	** -.277					* -.248	* -.228	* -.239
Information Data Level								* -.211	
Methodology or Control		* .219					* .205		
Extended Teacher Talk		* -.201							** .268
Extended Supervisor Talk		* .221							* -.235
Other Variables									
No. of Sequences in Conference						** -.256			
No. of suggestions									** -.238
Summary by Teacher									* .209
Summary by Supervisor						* -.205			
Use of Summary						* -.217			

*p<.05 **p<.01

TABLE 6

Correlations Between Supervisor

Variables and Conference Variables
(non-significant correlations have been omitted)

Conference Variables	Supervisor Variables					
Blumberg System	MTAI T	MTAI 1	MTAI 2	MTAI 3	MTAI 4	MTAI 5
Supervisor Behavior						
Category 3 Accepts					* -.218	
Category 8 Gives opinion						* .228
Teacher Behavior						
Category 11 Asks	* -.210		** .367	* .242	** .345	** .313
Steady State Areas						
Utilization of teacher ideas					* -.206	
Methodology or Control			* .201		* .230	** .266
Reaction Areas						
Use of summary		* -.197				

* $p < .05$ ** $p < .01$

TABLE 7

Correlations Between Teacher Characteristics

and Conference Variables
(non-significant correlations have been omitted)

Conference Variables	Teacher Variables						
Blumberg System	16PF1	16PF2	16PF3	16PF4	Age	Sex	Teaching Experience
<u>Supervisor Behavior</u>							
Category 2 Praises	* .244			** .290			
Category 3 Accepts		* -.220				* -.195	
Category 4 Asks for information							** .246
Category 9 Gives Suggestions		* -.199					* -.219
<u>Teacher Behavior</u>							
Category 12 Gives		* .199					
Category 13 Exhibits Positive	** .278						
Category 15 Silence	* -.218						
<u>Ratios</u>							
Supervisor/Teacher Talk		* -.203			** -.255		
<u>Steady State Areas</u>							
Utilization of Teacher Ideas		* -.228					
Opinion Data Level							* -.197

TABLE 7 continued

Conference Variables	Teacher Variables						
Blumberg System	16PF1	16PF2	16PF3	16PF4	Age	Sex	Teaching Experience
Steady State Areas							
Methodology or Control					* -.221		
Extended Teacher Talk		* .234					
Extended Supervisor Talk		* -.207			* -.285		
Reaction Areas							
Teacher Reaction					** .326		** .244
Supervisor Reaction					** .256		* .199
Other Variables							
Number of Suggestions	* .208				* -.215		* -.228
Number Made in Reteach	** .282				* -.201		
Summary by Teacher	** .287		* .237	** .258			
Use of Summary			* .222				* -.229

* $p < .05$ ** $p < .01$

TABLE 8

F-ratios Between Models Predicting Conference Interaction Variables

Criterion	Predictors Full Model	R^2_f	Predictors Restricted Model	R^2_r	df	F	Prob.
Indirect/ Direct	Supervisor Variables	.110	$a_0U + E$	.000	15/85	.704	.774
Support/ Criticism	Supervisor Variables	.299	$a_0U + E$	.000	15/85	2.413	.006*
Supervisor/ Teacher Talk	Supervisor Variables	.205	$a_0U + E$	.000	15/85	1.458	.140
Indirect/ Direct	Teacher Variables	.022	$a_0U + E$	.000	7/93	.298	.953
Support/ Criticism	Teacher Variables	.142	$a_0U + E$	.000	7/93	2.190	.042*
Supervisor/ Teacher Talk	Teacher Variables	.234	$a_0U + E$	.000	7/93	4.060	.001*
Indirect/ Direct	16PF scores	.076	$a_0U + E$	.000	8/92	.948	.482
Support/ Criticism	16PF scores	.079	$a_0U + E$	.000	8/92	.988	.450
Supervisor/ Teacher Talk	16PF scores	.147	$a_0U + E$	.000	8/92	1.988	.057
Indirect/ Direct	MTAI scores	.017	$a_0U + E$	.000	6/94	.269	.949
Support/ Criticism	MTAI scores	.014	$a_0U + E$	.000	6/94	.225	.968
Supervisor/ Teacher Talk	MTAI scores	.043	$a_0U + E$	.000	6/94	.703	.648
Indirect/ Direct	Supervisor and Teacher Personal Data	.027	$a_0U + E$	.000	8/92	.323	.955
Support/ Criticism	Supervisor and Teacher Personal Data	.151	$a_0U + E$	.000	8/92	2.042	.049*
Supervisor/ Teacher Talk	Supervisor and Teacher Personal Data	.187	$a_0U + E$	.000	8/92	2.653	.012*

TABLE 8 continued

Criterion	Predictors Full Model	R^2_f	Predictors Restricted Model	R^2_r	df	F	Prob.
Indirect/ Direct	Supervisor and Teacher Personal Data	.027	Full Model- Age	.017	2/92	.497	.610
Support/ Criticism	Supervisor and Teacher Personal Data	.151	Full Model- Age	.092	2/92	3.177	.046*
Supervisor/ Teacher Talk	Supervisor and Teacher Personal Data	.187	Full Model- Age	.132	2/92	3.165	.047*
Indirect/ Direct	Supervisor and Teacher Personal Data	.027	Full Model- Sex	.017	2/92	.065	.629
Support/ Criticism	Supervisor and Teacher Personal Data	.151	Full Model- Sex	.080	2/92	3.847	.025*
Supervisor/ Teacher Talk	Supervisor and Teacher Personal Data	.187	Full Model- Sex	.143	2.92	2.535	.085

* $p < .05$ ** $p < .01$

TABLE 9

F-ratios Between Models Predicting Proportion of Suggested Changes Made in Reteach

Criterion	Predictors Full Model	R^2_f	Predictors Restricted Model	R^2_r	df	F	Prob.
% changes made	Supervisor Variables	.368	a_0U + changes suggested + E	.163	15/84	1.818	.045*
% changes made	Teacher Variables	.244	a_0U + changes suggested + E	.163	7/92	1.397	.216
% changes made	16PF scores	.293	a_0U + changes suggested + E	.163	8/91	2.091	.045*
% changes made	16PF scores	.293	16PF without teacher	.258	4/91	1.136	.344
% changes made	Supervisor 16PF scores	.258	a_0U + changes suggested + E	.163	4/95	3.028	.021*
% changes made	MTAI scores	.196	a_0U + changes suggested + E	.163	6/93	.627	.709
% changes made	Supervisor and Teacher Personal Data	.234	a_0U + changes suggested + E	.183	8/91	1.054	.402
% changes made	Conference Variables	.179	a_0U + changes suggested + E	.163	4/95	.474	.755

*$p < .05$

REFERENCES

Allen, D. W. Microteaching: A new framework for in-service education. High School Journal, 1966, 49, 359.

Blumberg, A., & Cusick, P. Supervisor teacher interactions: An analysis of verbal behavior. Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, Minnesota, March, 1970.

Bottenberg, R. A. Applied multiple linear regression. Lackland Air Force Base, Texas: Aerospace Medical Division, 1963.

Cattell, R. B., & Eber, H. W. Sixteen personality factor questionnaire. Champaign, Illinois: Institute for Personality and Ability Testing, 1967.

Douglass, J. E. Microteaching, a practicum for supervisor education: A study of the effects of specified skills and conference behavior. Unpublished doctoral dissertation, The University of Akron, 1970.

Flanders, N. A. The problems of observer training and reliability. In E. J. Amidon, & J. B. Hough (Eds.), Interaction analysis: Theory, research, and application. Palo Alto: Addison-Wesley Publishing Company, 1967, Pp. 158-166.

Kelly, F. J., Beggs, D. L., & McNeil, K. A. Multiple regression approach. Carbondale, Illinois: Southern Illinois University Press, 1969.

Lindsey, M. Inquiry into teaching behavior of supervisors in teacher education laboratories. New York: Teachers College Press, Columbia University, 1969.

Newman, I., & Fry, J. A note on multiple comparisons and a comment on shrinkage. Multiple Regression Viewpoints, 1972, 2, 36-39.

Yee, A. H., & Fruchter, B. Factor content of the Minnesota Teacher Attitude Inventory. American Educational Research Journal, 1971, 8, 119-133.